

Build an Amiga 2000 Keyboard Adapter for the Amiga 1000

And do it for under \$7.00!

by Phillip R. Combs

Do you know where you can get a perfectly good A1000 CPU with a mouse but no keyboard?

Is your A1000 keyboard on its last legs?

Do you use an IBM at the office and an Amiga at home, and often press wrong keys at critical times due to keyboard layout differences?

YOU CAN CONSTRUCT A SIMPLE adapter for less than \$7.00 (at Radio Shack prices) that allows the use of an A2000 keyboard on the A1000. Not only will you get a better-feeling keyboard with a "standard" IBM layout, but you ensure the use of your computer for years to come.

SOME FACTS

Few people realize there are no electrical differences between A1000 and A2000 keyboards. The A1000 keyboard connects to the CPU with a telephone modular handset cable (known as an RJ11), while the A2000 uses an IBM style 5-pin DIN plug and cable. All four conductors of the A1000's cable are used, while only four of the five A2000 DIN plug pins are used. It doesn't matter that there are more keys on the A2000 keyboard. The software that interprets keypresses and translates them for the computer resides on your Workbench disk, not in the key-

board. It is easy to construct and connect the adapter; this article will show you how.

THE NUTS AND BOLTS

Figure 1 shows the pinouts of the A1000's modular keyboard jack and the A2000's DIN jack. The definitions for the A1000 comes from the Addison-Wesley *Amiga Hardware Reference Manual*, while the A2000 information comes from the A2000 service manual. Despite the minor name differences, the signals that both jacks carry are the same. All that is needed is a straight-through cable with a 5-pin DIN jack on one end, and a telephone handset plug on the other.

If you consult the A2000 service manual, you will notice a difference between the signal callouts there, and the ones in Figure 1 here. That is because the A2000 schematic is incorrect! This meant disassembling the A2000 keyboard and

poking around with an ohmmeter, for the purpose of doing this project correctly.

There is an important distinction in modular connectors to note here. The plug on your telephone cord that connects to the wall is a standard modular connector. The plugs on each end of your handset cord are called handset modular connectors. These connectors are smaller than the standard types. While you can go down to K-Mart and pick up standard modular connectors and crimp tools, the handset variety are more difficult to find.

To make this project as simple to construct as possible, I opted for the brute force method. I purchased a telephone handset cable at Radio Shack, along with a 5-pin DIN inline jack. I then chopped a four-inch length of wire that included the connector from one end. This was then wired to the DIN jack. The Radio Shack part numbers for these two items are shown in the Parts List on the following page. In addition to these parts, you will need the following tools: a soldering iron (25-35 watt) and rosin-core solder, pliers, wire strippers, hobby knife, small wire cutters, and an ohmmeter.

ASSEMBLING THE CABLE

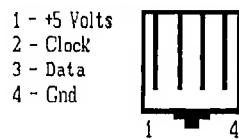
Refer to the schematic shown in Figure 2. The 5-pin DIN jack is viewed from the solder side. The modular handset cable is viewed from the bottom. The four copper conductors face you, the plastic tab faces away from you, and the cable dangles toward the floor. The wires in my cable were different colors, and those are indicated in the figure.

Now, follow these steps:

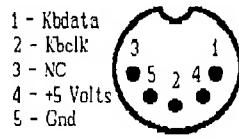
- 1) Cut the handset cord about 4" from one end. Then, disassemble the inline DIN

jack by pulling the center (the part with the five holes) out of the sleeve. You will then have four parts—two silver half-circular metal pieces, the plastic jack, and the outer sleeve.

2) Slide the sleeve onto the 4" wire you just cut, smaller end first. This sleeve will slide over the jack and protect your wire connections later.



A1000 RJ11 Jack



A2000 DIN Jack

View: looking at machine

Figure 1. A1000/A2000 Keyboard Jack Pinouts.

3) Carefully trim about 3/4" of the cable's outer jacket away. Do not nick the insulation of the inner wires.

4) Next, trim about 1/8" of insulation from each of the four inner wires. Be very careful. The inner conductors of these wires are actually thin foil strips wound around a nylon core. After stripping the insulation away, tin the exposed conductors with solder. The nylon core will burn somewhat. Apply a little heat and solder, then back off. Repeat the process until the conductors are properly tinned.

5) Now, you must identify the wires. Hold the modular plug as described above, being careful not to let the DIN jack's sleeve slide off. Look at the area of the plug between the four copper-colored conductors and the cable. You should be able to see each wire's color through the plastic, as well as which conductor each wire connects to. If your wires are different colors, you are in luck. Simply substitute your cable's wire colors for those shown in Figure 2.

If your wires are all one color, don't panic. The four wires lie side-by-side for the length of the cable. You simply need to identify which one is the "B" wire, and the other wires will fall into place. You have a fifty-percent chance of finding it the first time you try, as it is one of the two outer wires in the cable. Using the ohmmeter, identify this wire and solder it to pin 4 of the DIN jack. Next to the "B" wire will be the "R" wire, which goes to pin 2. The "G"

wire will connect to pin 1, and the "Y" wire will be soldered to pin 5. After connecting all the wires, use the ohmmeter to check your work, and ensure that you made good connections.

6) Next comes assembly of the jack. Locate the semi-circular silver piece with the smaller U-shaped end. This is the jack's strain relief. Opposite the smaller U-

be selected on your Workbench disk, and can be found in the Devs/Keymaps directory. For Workbench 1.2, all keymaps should be in this directory. The preselected keymap is USA. For Workbench 1.3, only the USA1 keymap may be found in the Devs/Keymaps directory. All others are located in the Devs/Keymaps directory on the Extras disk. Should you wish to

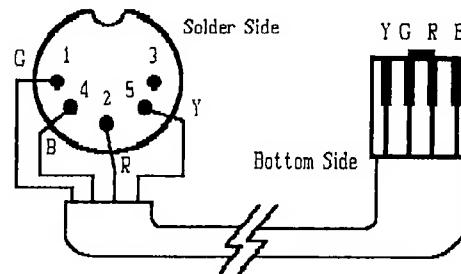


Figure 2. Wire Connection Diagram.

shaped end, you will see a thin, 1/4" long metal piece extending from the strain relief. Look carefully at the jack's center (the part you just soldered wires to). There is a square channel on the edge, running from front to back. Place the jack onto this strain relief so that the thin metal piece lies in the square groove. There are molded bumps on the jack's edge that match the holes in the strain relief. Crimp the U-shaped piece around the cable's outer jacket, making sure you allow some slack in the loose wires. This is very important, as these wires should not be stressed.

Place the other metal piece over the top of the jack assembly, so that the inner wires are now covered back to the crimp. The remaining bumps on the jack's edge will go into matching holes on the metal piece. You will have to hold this assembly together for the time being. Next, look at the sleeve you slid onto the cable in the first step. You will see a squared, U-shaped cut in the sleeve. You should also see a square hole in one of the jack's metal pieces. Slide the sleeve up over the jack assembly, aligning the U-shaped cut and the square hole. Push the jack assembly into the sleeve until it is even with the sleeve's end. This completes your adapter.

SOFTWARE CONSIDERATIONS

No adjustments to your Workbench software are necessary to use your new keyboard and adapter. The correct keyboard driver, or keymap, should already

experiment with different keymaps, consult your Workbench manual for more details.

HOOKUP

With the A1000's power off, insert the A2000 keyboard plug into your new adapter, then plug the adapter's modular end into your A1000. Turn on the power and boot as normal. You should find that your new keyboard will work as well as your old one, but will feel much better to your fingers.

Some people may be wondering how useful this project can be. Despite Commodore's efforts to remove the A1000 from the market, a lot of life is left in this machine. Clearly, there are those who are so attached to their A1000s, that they will never give them up. Others may want to donate their A1000s to schools, charities, or computer-hungry youngsters.

No tool is obsolete as long as a use exists for it. A new saw may be shinier and may cut better than your old one. However, adding a new blade to your old saw can give it new life—and save you money, too.

Radio Shack Parts List

Qty.	Part Number	Description
1	274-006	5-Pin DIN Inline Jack
1	279-308	Beige Coiled Handset Cord

•AC•